Report for 2002LA3B: Response to Hurricane Induced Flooding in New Orleans

There are no reported publications resulting from this project.

Report Follows:

Hurricane Betsy and Its Effects on the Architectural Integrity of the Bywater Neighborhood: Summary

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May 2003

INTRODUCTION

Very few places face the risk of experiencing the chaos and damage of a hurricane as much as New Orleans. In addition to the risk of physical damage and loss of life, New Orleans faces cultural risks of an extreme nature. New Orleans is a city with a unique architectural legacy that it has utilized as a significant factor in its thriving tourist industry. Many academic works have been penned documenting the existence, age, and unique character of New Orleans' architectural heritage. From the Uptown district along St. Charles Avenue, downriver through the French Quarter, and further downriver into the Bywater and Holy Cross neighborhoods, architecture, and the framework that it creates, defines the New Orleans landscape. From grand mansions along St. Charles Avenue, to the shotgun structures which dominate the Bywater neighborhood (64 percent of architectural stock), the range of architectural styles, and their sheer numbers, is astounding. Additionally, the geographic range of these structures within the city creates a zone, roughly following the river, which encourages tourists to experience structures designed for the wealthiest Louisianans, bourgeois housing contructed for shopkeepers and other middle class residents of the city, to the simple though highly articulated homes of dockworkers and laborers, which cover the Bywater neighborhood.

Despite this widespread appreciation of the city's unique architectural assets and efforts by preservationists, the historic fabric of the city is at risk. One of the most

pervasive issues in New Orleans is how the city will respond to a major hurricane, a category four or five storm, following the path east of the city that is projected to cause the most damage. A storm of this type would inundate much of the city and could potentially ruin many historic structures and thereby undermine a central tourist attraction.

How would the city's unique architectural heritage fare following a devastating flood? We sought an analogous situation by which to assess how private property owners responded to hurricane induced flooding in the past. This situation existed within the city limits, downriver from the French Quarter in the Bywater neighborhood. Hurricane Betsy struck the New Orleans area in 1965 and provided the parallel situation which we sought. The storm surge created by the hurricane overtopped the protective levees within the Inner Harbor Navigational Canal (IHNC) and flooded the neighborhoods on either side of the canal. On the western side of the IHNC, floodwaters entered "6,350 homes and 396 businesses [with] water as high as 7.0 feet above first floor level" (USACE 1965, 27). Even though the Bywater is mostly located on higher ground closer to the river, sections of the neighborhood flooded to a depth of roughly five feet, which inundated structures, outbuildings, and automobiles in those areas.

The use of this study area is important when one considers the elevations within the French Quarter and upriver portions of the city. The five-foot elevation contour runs through the center of the Bywater neighborhood, continuing upriver through the French Quarter between Dauphine and Burgundy, and upriver from that point crisscrossing back and forth across St. Charles Avenue. From that perspective, the importance of this study area resonates with relevance and physical similarity to other significant architectural assets and tourism attractions of the city.

The research question relates to most other historic structures and areas within New Orleans – did the historic building fabric of the Bywater remain intact after damage

by hurricane induced flooding? Would a similar event sufficiently damage historic architecture to the extent that tourism would be affected? This project will seek to answer those questions by examining a specific area flooded in 1965, classifying those structures based on their existing "integrity," or alternatively, their negative alteration or destruction. This examination will offer insight into the potential recovery and maintenance of integrity following a significant flooding event.

In an area where tourism has become one of the main economic generators, any disruption of that tourism has immediate and devastating effects on the economy and people. Impacts to the French Quarter and Uptown neighborhoods could have far-reaching consequences. As part of the City of New Orleans stock of architecturally significant buildings, the Bywater neighborhood is part New Orleans' economic base. As an area that has experienced significant flooding in the past, it becomes important to study this area and its recovery.

HURRICANE BETSY

Since 1559, 172 hurricanes have affected coastal Louisiana and of these, thirty-eight have reached New Orleans via Lake Pontchartrain (Shallat 2000, 122). Storm surges delivered by hurricane-force winds across Lake Pontchartrain pose the greatest risks. A storm that struck the state of Louisiana and the City of New Orleans in 1965 proved to be the "most destructive hurricane on record to strike the Louisiana coast" (USACE 1965, foreword).

A classic Cape Verde storm, Betsy formed in the tropical Atlantic and wandered across the Atlantic Ocean and the Gulf of Mexico over a period of fourteen days. On September 9, 1965, Betsy was in the southern Gulf of Mexico and gaining northerly momentum as it approached Louisiana's coast. In addition to gaining forward speed, the storm was intensifying as it moved toward land. Mid-afternoon on September ninth,

"Navy reconnaissance aircraft indicated the storm was intensifying and had a central pressure of 28.00 inches" (USACE 1965, 4). Weather forecasters estimated the peak winds at 150 m.p.h. Winds in New Orleans "exceeded 100 m.p.h." shortly after 10 p.m. (USACE 1965, 4).

"Vast areas of Orleans, Plaquemines, and St. Bernard Parishes were inundated by the tidal surge that accompanied the storm. This surge either overtopped or breached the non-Federal levee protecting these areas" (USACE 1965, 8). Rainfall varied from 3 inches to nearly 6 inches, but very little of the serious flooding accompanying the storm could be attributed to rainfall (USACE 1965, 20). New Orleans' weather office measured 5.10 inches of rainfall.

The storm's record tidal surge produced by the rapid forward movement of the storm (17-22 m.p.h.), combined with the intensity of the storm caused the most damage. "The fast rising waters exceeded previously established high water records on the Mississippi River from Pointe-a-la-Hache to the mouth of the river" (USACE 1965, 20). The U.S. Army Corps of Engineers inventory of flooding in the Ninth Ward reports that: (See Figure 1)

> Flooding in the New Orleans area west of the Inner Harbor Navigation Canal and south of Gentilly Boulevard resulted from a tidal surge which overtopped the Inner Harbor Navigation Canal west levee, in the vicinity of the intersection of the canal and the Mississippi River-Gulf Outlet. Subsequent levee breaks and/or overtopping southward along the canal caused additional flooding in this portion of New Orleans. After the low-lying areas adjacent to the canal were flooded, this water backed up into the area west of the Inner Harbor Navigation Canal and north of Gentilly Boulevard by way of drainage canals and subsurface drains. In the area west of the Inner Harbor Navigation Canal and south of Gentilly Boulevard, 6,350 homes and 396 businesses had water as high as 7.0 feet above first floor level. Losses in this vicinity were especially severe to homes, businesses, and automobiles. (USACE 1965, 27)

The damage and inundation throughout the state covered "4,800 square miles, killed 81 persons, caused about 250,000 persons to be evacuated, and disrupted

transportation, communication, and utilities service throughout the eastern coastal area of Louisiana for weeks" (USACE 1965, foreword).

ANALYSIS

Parts of the Bywater neighborhood flooded during Hurricane Betsy. The Corps of Engineers mapped the area inundated by the storm surge in the Bywater neighborhood. The data derived from a review of structures, (Table 1) show that 37 years after a severe flood event, the neighborhood still maintains a high degree of architectural integrity. Over 76 percent of properties which experienced some degree of inundation still retain architectural integrity. The areas that were not flooded maintain 83 percent architectural integrity. The degree of intrusive properties, (those that do not contribute to integrity), is 24 and 17 percent respectively. This percentage of intrusion is well within the acceptable range for historic districts based on national averages (Louisiana Department of Historic Preservation 1985, 8:10).

A significant percentage of the Bywater neighborhood structures maintain integrity. Hurricane Betsy predates the advent of the National Flood Insurance Program, the placement of the neighborhood on the National Register, and the establishment of the HDLC as an oversight body for the neighborhood. Without significant resources with which to renovate and rehabilitate, and without rigorous building codes for reconstruction efforts, the neighborhood still maintains its architectural significance as a unique and contributing inventory of historic structures in New Orleans, the South, and the country.

Why does this neighborhood still retain its architectural integrity in spite of little attention from federal agencies and historic preservation organizations? The degree of flooding was not as great in the Bywater as in the lower Ninth Ward. Also, the conversion during the 1960s and 1970s of many properties to rental units, with absentee landlords, might have prevented extensive renovation from occurring following the

storm. Absentee landlords often perform minimal repairs, in order to make a structure habitable, but no more.

What this research suggests is that historically significant areas of the city, the Bywater, the French Quarter, and the upriver neighborhoods of the Garden District and Uptown, would probably continue to retain their architectural integrity following a major hurricane event, with its accompanying storm surge.

CONCLUSION AND DISCUSSION

Despite serious hurricane-induced flooding, important architectural fabric within the Bywater neighborhood still retains its historical integrity. Original, mostly nineteenth-century designs have persisted through past hurricane flooding and damage. Even in a low-income area, with large absentee landlord ownership, original fabric is largely intact. This degree of integrity has now become a focus for renovation and rehabilitation, with an upsurge in property values and population density increasing.

In terms of risk from hurricane-induced flooding to historic architecture in New Orleans, this study suggests that historic structure restoration and maintenance would persist if damage were not too extreme. If the city responded in a fashion similar to Charleston after Hurricane Hugo, negative affects on tourism would be minimized and the economy would recover within an acceptable time frame.

At a time when there would have been a tendency to remove housing stock and replace it with new, non-flooded dwellings, the neighborhood was going through a period of economic decline. Instead of replacing damaged buildings, owners instead repaired what remained, sold out at reduced rates to investors who then converted the property to rental units, which were then rented to less-affluent tenants. Absentee landlords took advantage of the situation by buying properties from those who found themselves living

in damaged homes with inadequate insurance. This social factor caused huge out migration within the neighborhood and then in migration of those less fortunate individuals who could not afford adequate housing in other areas. Daniel McElmurray, current president (2002-2003) of the Bywater Neighborhood Association (BNA), states that this trend did not begin to reverse itself until the late 1980s. The reversal accelerated after the successful nomination of the neighborhood to National Register status.

Hurricane Betsy occurred before the advent of the National Flood Insurance Program. Instead of having insurance money and federal dollars flowing into a historic neighborhood, the Bywater made do with what was left, thereby preserving the integrity of the district through neglect and acceptance of less than desirable circumstances.

In studying historic districts, this phenomenon is not unique. Two very relevant examples exist in Charleston and New Orleans. In Charleston, the city entered a period of decline following the Civil War and that decline was not reversed until midway through the twentieth century. In 1933, preservations formed the Historic Charleston Foundation and began saving properties that had been neglected for over 70 years. These properties maintained significant architectural integrity because many in Charleston, during the lean years, stated the typical Southern upper-class credo: "Too poor to paint, too proud to whitewash." So with a lack of resources, those who had been members of the property owning class simply maintained what they had, thereby preserving architectural integrity for future generations.

In New Orleans, the French Quarter had become a ghetto and an abandoned area. Preservationists realized the potential loss that was occurring and formed the Vieux Carré Commission in 1935, to rescue some of the oldest and most unique architecture in the city. The result is one of the most widely recognized and successful historic districts in the country.

During a period of great affluence and modernization, the 1920s, these two areas in Charleston and New Orleans were basically untouched by progress and left to be rescued by future generations. I contend that this same sort of cultural phenomenon occurred in the Bywater: that by attrition, neglect, and abandonment, the architectural stock of the neighborhood was left alone, mothballed so to speak, until the current gentrification of the neighborhood began to occur in the mid 1980s.

This research did not demonstrate a distinct difference between the flooded and non-flooded areas. I contend that what this shows is the absolute importance of examining the cultural influences, the human agency -- whether negative or positive -- to determine why things occur. Only by looking at historical events in context can we begin to understand why results are not what we expect. Additionally, this research also underscores the importance of particularity in looking at a hazard event. If this event had occurred in an affluent, well-insured area, the results might have been completely different and modern ranch houses might have replaced damaged structures.

Just as Charleston founded the Charleston Heritage Foundation, civic leaders and preservation organizations within New Orleans should consider forming a general oversight organization which would oversee protection of architectural properties following a natural disaster. A foundation, acting as a conduit between federal disaster relief and all of the preservation organizations, would prevent confusion and duplication of services at a time when there would be few resources available, thereby protecting as many structures as possible.

The kind of structure created in Charleston to deal with the damage from Hurricane Hugo must be duplicated in New Orleans in the event of a major flooding event. The same issues that historic preservationists dealt with in Charleston would exist in New Orleans. The involvement of the various agencies dealing with disaster relief need to be coordinated through local agencies familiar with the vernacular building

materials and forms in order to preserve the integrity of the historic architecture of the city. Federal aid is a critical component of disaster recovery in today's economy and world. The coordination of that aid through local agencies would ensure that property owners had a central point of contact by which they could file claims, receive permits for restoration and return the city to normal as soon as possible.